FROZEN ROAD DECLARATION/SPRING WEIGHT RESTRICTION

DECISION PROCESS

State highways in Wisconsin are determined frozen at the start of the winter season when the frost depth under the pavement surface has reached a depth of 18"-20" as determined by the resources listed below. The 20+ year average date for the beginning of the frozen road period has been December 19th.

State highways in Wisconsin are determined to be unfrozen at the end of the winter season when the thawing depth under the pavement surface reaches a depth of 18"-20". The 20+ year average date for the end of the frozen road period has been March 4th.

During spring, thawing begins at the pavement surface and moves downward. This can mean that frost under the pavement surface may still extend down to a depth of 48 – 72 inches, while thawing of the top 18 - 20 inches under the pavement has occurred; this is the condition that creates so many problems with the pavement. As the top 18 - 20 inches begin to thaw the moisture cannot drain downward due to the frozen soil below. This trapped moisture causes the soil in this depth to act like a "sponge" and thus allows the bituminous pavements to move up and down due to vehicle weights traveling on the pavement surface. The pavement can be weakened by this continuous oscillating movement and thus begin to crack and break down. For this reason, spring seasonal weight restrictions are imposed on state highways from approximately March 10th through May 10th (35 + years average dates).

Also during this time period, air and pavement temperatures can fluctuate greatly during the daytime and nighttime hours. Daytime temperatures in the 20's and 30's with the sun shining on a bituminous pavement surface can produce pavement temperatures in the 50's and cause thawing of the pavement and support system. During the nighttime hours, the roadway can refreeze due to lower temperatures. This daily "freeze-thaw cycle" can also cause distress to the pavement. The distress is then multiplied by the effect of heavy loads. This is the time of the year where most of the potholes are created. So for these reasons, weight restrictions need to be placed on state bituminous pavement highways during the spring thawing period, typically from early March to early May.

The beginning and ending dates for the Frozen Road period and the Class II Road period (and suspension of divisible overweight permits) are determined by the Wisconsin Department of Transportation (WisDOT) Bureau of Highway Operations using the following resources:

1) National Weather Service (N.W.S.) 30 day temperature and precipitation forecasts (available at http://www.cpc.ncep.noaa.gov/products/predictions/90day)

2) National Weather Service (N.W.S.) 6-10 day and 10-14 day long range weather forecasts (available at http://www.ncep.noaa.gov/nationalmaps)

3) Ten day weather forecasts for individual Wisconsin cities available from Accuweather.com available at:
http://wwwa.accuweather.com/us-city-list.asp?zipcode=-%2CWI&partner=accuweather&go.x=14&go.y=6

4) The WisDOT Roadway Weather Information System (R.W.I.S) which includes 58 roadside weather stations located throughout Wisconsin on the state highway system. Sensors at these weather stations record current air temperatures, pavement surface temperatures, and sub-surface temperatures at 18" below the surface of the pavement.

5) Twenty-eight (28) frost tubes installed in bituminous pavements that are manually read for frost and thaw depths under the pavement surface. These frost tubes are located in WisDOT's Northeast Region (2 frost tubes), Northcentral Region (17 frost tubes), Southwest Region (2 frost tubes), and Northwest Region (7 frost tubes).

6) Observations and engineering evaluation of current pavement conditions by the staff at the five WisDOT Regional Highway Operations offices. They travel on the state highway system on a daily basis and observe signs of the current pavement surface conditions that indicate whether the pavement is weakening during the spring thawing period or is gaining strength during the frozen road period.

7) Infrared pavement temperature sensors that continuously record the temperature of the pavement surface in the vehicles used by the WisDOT Regional Highway Operations staff as they monitor the road conditions.